

Abstract

A description is given of electrosterically stabilized polyurethane resins having an improved profile of properties, obtainable by

- a) preparing a hydrophilic and solvent-free macromonomer (A)(ii) with monomodal molecular mass distribution, by
 - a₁) reacting 50 to 100 parts by weight of a hydrophilic alkyl- or arylpolyalkylene glycol (A)(i) with 1 to 100 parts by weight of a polyisocyanate component (B)(i) optionally in the presence of a catalyst in the absence of solvents, and subsequently
 - a₂) reacting the uniform preadduct from stage a₁) completely with 0.5 to 200 parts by weight of a compound (C) in the absence of solvents, and
- b) by preparing the polyurethane dispersion, by
 - b₁) reacting 2 to 50 parts by weight of the hydrophilic and solvent-free macromonomer (A)(ii) with 25 to 250 parts by weight of the polyisocyanate component (B)(i), optionally in the presence of 0 to 50 parts by weight of a solvent component (D) and also of a catalyst,
 - b₂) reacting the polyurethane preadduct from stage b₁) with 50 to 100 parts by weight of a polymeric polyol (A)(iii) and optionally with 0.5 to 10 parts by weight of a low molecular mass polyol component (A)(iv), optionally in the presence of a catalyst,
 - b₃) reacting the homogeneous polyurethane preadduct from stage b₂) with 2 to 20 parts by weight of a polyol component (A)(v), optionally in the presence of a catalyst,
 - b₄) admixing the homogeneous polyurethane prepolymer from stage b₃), before or during dispersion in 50 to 1500 parts by weight of water, with 2 to 20 parts by weight of a neutralizing component (E),

b₅) dispersing the optionally (partially) neutralized polyurethane prepolymer from stage b₄) in 50 to 1500 parts by weight of water, which optionally further contains 0 to 100 parts by weight of a formulating component (F), and finally

b₆) reacting the (partially) neutralized polyurethane prepolymer dispersion from stage b₅) with 3 to 60 parts by weight of a chain extender component (G) and also, subsequently or simultaneously, with 0 to 30 parts by weight of a chain stopper component (H).

The performance properties of the polyurethane dispersions of the invention in terms of absence of solvent, and also material properties, are excellent. Also deserving of emphasis are the simplicity and reproducibility of the process and the storage stability of the products.